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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/071,980 | NORRELL ET AL. | |
| | Examiner | Art Unit | |
| | Juan A. Torres | 2631 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-19-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

The modifications to the drawings were received on 10/19/2005. These modifications are accepted by the Examiner.

### *Specification*

The modifications to the specification were received on 10/19/2005. These modifications are accepted by the Examiner.

### *Claim Objections*

In view of the amendment filed on 10/19/2005, the Examiner withdraws claim objections of claims 1 and 14 of the previous Office Action.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-35 and 37-47 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claim 36

Applicant's arguments filed 10/19/2005 have been fully considered but they are not persuasive.

The Applicant contends, "It is respectfully submitted that the examiner has not shown that the power supplies of Shenoi anticipate the first means for providing power" or "second means for providing power" as construed to cover the corresponding structuret(s) described in the specification, or equivalents thereof."

The Examiner disagrees and asserts, that, as indicated in the previous Office action Shenoi discloses first means for providing power to the means for amplifying

(column 8 lines 51-67); a second means for providing power via the means for transmitting DSL signals to the first means for providing power (column 7 lines 57-67). As the Applicant indicates the "power supplies of Shenoi" the Examiner assert that are very well known means for providing power. For these reasons and the reason stated en the previous Office action, the rejection of claim 36 is maintained.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 36 is rejected under 35 U.S.C. 102(e) as being anticipated by Shenoi (US 6507606). Shenoi discloses a system for improving transmission of DSL signals, the system comprising means for transmitting DSL signals (column 1 lines 48-60 and column 1 line 61 to column 2 line 11); means for amplifying the transmitted DSL signals (figure 4 column 7 line 64 to column 8 line 14); first means for providing power to the means for amplifying (column 8 lines 51-67); second means for providing power via the means for transmitting DSL signals to the first means for providing power (column 7 lines 57-67); means for controlling the means for amplifying to improve performance of the means for amplifying (column 8 lines 57-67); means for broadcasting to the means for controlling (column 1 lines 48-60 and column 1 line 61 to column 2 line 11); means

for generating control signals (column 8 lines 57-67 and column 17 line 61 to column 18 line 3); means for sending the control signals via the means for transmitting DSL signals to the means for broadcasting (column 1 lines 48-60 and column 1 line 61 to column 2 line 11).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-14 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tambe (US 20020113649 A1) in view of Hurst (US 5422929) (with Surprenant (US 4277655 A) to indicate a well-known motivation).

As per claim 1 Tambe discloses a plurality of loop extenders coupled to a plurality of local loops for amplifying upstream and downstream DSL signals transmitted over a first local loop and a second local loop selected from the plurality of local loops (figures 4 and 5 page 4 paragraphs [0043] to [0044]); a central office controller/power supply coupled to a first local loop of the plurality of local loops and coupled to a second local loop of the plurality of local loops for providing power supplying a supply voltage between to the first local loop and the second local loop (pages 4-5 paragraph [0049] to [0052]); and a loop extender communications/power supply coupled to the central office controller/power supply via the first local loop and the second local loop for receiving power via the first local loop and the second local loop, and coupled to the plurality of

loop extenders for providing power to the plurality of loop extenders (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe doesn't specifically disclose that the power is supply by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop. Hurst discloses that the power is supply by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop (figure 4 column 8 line 61 to column 9 line 8). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 1.

As per claim 2 Tambe and Hurst disclose claim 1. Hurst also discloses that the central office controller/power supply is coupled to the first local loop via a first transformer and coupled to the second local loop via a second transformer (figure 2 column 4 lines 53-65). Tambe and Hurst are analogous art because they are from the

same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 2.

As per claim 3 Tambe and Hurst disclose claim 2. Hurst also discloses that the central office controller/power supply includes a central office power supply, a positive node of the central office power supply being inductively coupled to a center tap of the first transformer and a negative node of the central office power supply being inductively coupled to a center tap of the second transformer (figure 2 and figure 4 column 8 line 61 to column 9 line 8). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid

loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 3.

As per claim 4 Tambe and Hurst disclose claim 1. Hurst also discloses that the loop extender communications/power supply is coupled to the first local loop via a third transformer and coupled to the second local loop via a fourth transformer (figure 2 column 4 lines 53-65). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 4.

As per claim 5 Tambe and Hurst disclose claim 4. Hurst also discloses that the loop extender communications/power supply includes a loop extender power supply, a positive node of the loop extender power supply being inductively coupled to a center tap of the third transformer and a negative node of the loop extender power supply

being inductively coupled to a center tap of the fourth transformer (figure 2 and figure 4 column 8 line 61 to column 9 line 8). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 5.

As per claim 6 Tambe and Hurst disclose claim 5. Tambe also discloses that the loop extender power supply is coupled to the plurality of loop extenders for providing power to the plurality of loop extenders (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss

between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 6.

As per claim 7 Tambe and Hurst disclose claim 1. Tambe also discloses that the central office controller/power supply includes a first modem for communication with the plurality of loop extenders, a processor coupled to the first modem, and loop extender management software executable by the processor for generating control signals; and the loop extender communications/power supply includes a second modem for communication with the central office controller/power supply (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 6.

As per claim 8 Tambe and Hurst discloses claim 7. Hurst also discloses that the first modem is coupled to the first local loop via a first transformer and coupled to the second local loop via a second transformer, and the second modem is coupled to the first local loop via a third transformer and coupled to the second local loop via a fourth transformer (figure 2 column 4 lines 53-65). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 8.

As per claim 9 Tambe and Hurst disclose claim 8. Tambe also discloses that the first modem is coupled to a center tap of the first transformer via a first capacitor and coupled to a center tap of the second transformer via a second capacitor, and the second modem is coupled to a center tap of the third transformer via a third capacitor and coupled to a center tap of the fourth transformer via a fourth capacitor (figure 6 pages 5-6 paragraphs [0059] to [0062]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have

been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 9.

As per claim 10 Tambe and Hurst disclose claim 9. Hurst also discloses a transformer couples the first capacitor and the second capacitor to the first modem, and a transformer couples the third capacitor and the fourth capacitor to the second modem. (figure 2 column 4 lines 53-65). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US

4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 10.

As per claim 11 Tambe and Hurst disclose claim 10. Tambe also discloses that the first modem and the second modem communicate in a voice-frequency band (page 1 paragraph [0008]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 11.

As per claim 12 Tambe and Hurst disclose claim 8. Tambe also discloses that the processor sends the control signals to the first modem for transmission over the first local loop and the second local loop (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to

use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 12.

As per claim 13 Tambe and Hurst disclose claim 12. Tambe also discloses that the second modem receives the control signals and broadcasts the received control signals to the plurality of loop extenders via the plurality of local loops (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 13.

As per claim 14 Tambe and Hurst disclose claim 13. Tambe also discloses that each loop extender of the plurality of loop extenders includes a POTS loading coils coupled to a local loop of the plurality of local loops (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]); DSL amplification circuitry coupled to the local loop via bypass switches (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]); an analog multiplexer/analog-to-digital converter (AMADC) coupled to the DSL amplification circuitry via diagnostic lines and control lines for sampling DSL signals via the diagnostic lines and controlling the DSL amplification circuitry via the control lines (figures 2 and 3 pages 3-4 paragraphs [0036] to [0042]); and a diagnostic/control processor (DCP) coupled to the local loop and the AMADC for processing the control signals received via the local loop and processing the sampled DSL signals from the AMADC (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 14.

As per claim 24 Tambe discloses amplifying upstream and downstream DSL signals transmitted over a first local loop and a second local loop selected from a plurality of local loops via a plurality of loop extenders coupled to the plurality of local loops (figures 4 and 5 page 4 paragraphs [0043] to [0044]); providing power to a loop extender communications/power supply via a first local loop of the plurality of local loops and via a second local loop of the plurality of local loops for providing power to the plurality of loop extenders (pages 4-5 paragraph [0049] to [0052]); sending control signals to a loop extender communications/power supply via the first local loop and via the second local loop, receiving the control signals, and broadcasting the control signals to the plurality of loop extenders (figures 4 and 5 pages 4-5 paragraphs [0043] to [0052]). Tambe doesn't specifically disclose that the power is supply by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop. Hurst discloses that the power is supply by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop (figure 4 column 8 line 61 to column 9 line 8). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop

while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 24.

As per claim 25 Tambe and Hurst disclose claim 24. Tambe also discloses that the control signals are broadcast in a voice-frequency band (page 1 paragraph [0008]). Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 25.

Claims 37-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shenoi (US 6507606) and further in view of Hurst (US 5422929) (with Surprenant (US 4277655 A) to indicate a well-known motivation).

As per claim 37 Shenoi discloses a system for improving transmission of DSL signals, the system comprising a plurality of local loops, including a first local loop for

transmitting control signals and power, and a second local loop for transmitting control signals and power (column 8 line 49 to column 9 line 10); a plurality of loop extenders for amplifying DSL signals, coupled to the plurality of local loops, each loop extender including a POTS loading coils coupled to a local loop from the plurality of local loops, DSL amplification circuitry coupled to the local loop via bypass switches, an AMADC coupled to the DSL amplification circuitry via diagnostic lines and control lines, for sampling DSL signals via the diagnostic lines and controlling the DSL amplification circuitry via the control lines, and a DCP coupled to the local loop and the AMADC for processing the control signals received via the local loop and processing the sampled DSL signals received via the AMADC (figures 4 and 5 column 7 line 48 to column 9 line 10); a loop extender communications/power supply coupling the first local loop and the second local loop to the plurality of loop extenders for providing power and broadcasting the control signals to the plurality of loop extenders, the loop extender communications/power supply including a second modem for communication with the plurality of loop extenders (figures 4 and 5 column 7 line 48 to column 9 line 10); and a central office controller/power supply coupled to the first local loop and coupled to the second local loop for providing power to the loop extender communications/power supply, generating the control signals, and sending the control signals to the loop extender communications/power supply, the central office controller/power supply including a first modem for communication with the loop extender communications/power supply, a processor coupled to the first modem, and loop extender management software executable by the processor for generating the control

signals (column 8 line 49 to column 9 line 10). Shenoi doesn't disclose a first transformer and a second transformer; and that the power or the control signals are supplied as a voltage between a first local loop and a second local loop. It is very well known and Hurst discloses that the central office controller/power supply is coupled to the first local loop via a first transformer and coupled to the second local loop via a second transformer (figure 2 column 4 lines 53-65); and that the power is supply by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop (figure 4 column 8 line 61 to column 9 line 8). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 37.

As per claim 38 Shenoi and Hurst disclose claim 37. Shenoi discloses that the first modem and the second modem communicate in a voice-frequency band (column 1 lines 48-60). Shenoi and Hurst are analogous art because they are from the same field

of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 38.

As per claim 39 Shenoi and Hurst disclose claim 38. Shenoi discloses that the processor sends the control signals to the first modem for transmission over the first local loop and the second local loop (column 8 line 49 to column 9 line 10). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would

have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 39.

As per claim 40 Shenoi and Hurst disclose claim 39. Shenoi discloses that the second modem receives the control signals and broadcasts the received control signals to the plurality of loop extenders via the plurality of local loops (column 8 line 49 to column 9 line 10). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 40.

As per claim 41 Shenoi and Hurst disclose claim 40. Shenoi inherently discloses that the sampled DSL signals to compute average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to

supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 41.

As per claim 42 Shenoi and Hurst disclose claim 40. Shenoi inherently discloses that the DCP processes the sampled DSL signals to compute peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would

have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 42.

As per claim 43 Shenoi and Hurst disclose claim 40. Shenoi inherently discloses that the sampled DSL signals to compute root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 43.

As per claim 44 Shenoi and Hurst disclose claim 40. Shenoi discloses that the DCP processes the sampled DSL signals to compute power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to

supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 44.

As per claim 45 Shenoi and Hurst disclose claim 40. Shenoi inherently discloses that each loop extender further includes a bypass relay for coupling the DCP to the bypass switches (column 8 line 57 to column 9 line 35). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would

have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 45.

As per claim 46 Shenoi and Hurst disclose claim 45. Shenoi inherently discloses that the DCP, upon receiving control signals, uncouples the DSL amplification circuitry from the local loop by activating a deactivated bypass relay (column 8 line 57 to column 9 line 35). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 46.

As per claim 47 Shenoi and Hurst disclose claim 45. Shenoi inherently discloses that the DCP, upon receiving control signals, couples the DSL amplification circuitry to the local loop by deactivating an activated bypass relay (column 8 line 57 to column 9 line 35). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the

coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 47.

As per claim 48 Shenoi and Hurst disclose claim 40. Shenoi discloses processing the control signals to select the DSL amplification circuitry for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 48.

As per claim 49 Shenoi and Hurst disclose claim 40. Shenoi discloses processing the sampled DSL signals to select the DSL amplification circuitry for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35). Shenoi and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the lop extender disclosed by Shenoi with the coupled transformers disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two directions of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract). Therefore, it would have been obvious to combine Shenoi with Hurst to obtain the invention as specified in claim 49.

Claims 15-23 and 26-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tambe and Hurst as applied to claim 14 above, and further in view of Shenoi (US 6507606).

As per claim 15 Tambe and Hurst disclose claim 14. Tambe and Hurst don't disclose that the DCP processes the sampled DSL signals to compute average power. Shenoi inherently discloses that the DCP processes the sampled DSL signal data to compute average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the

spectral density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 15.

As per claim 16 Tambe and Hurst disclose claim 14. Shenoi inherently discloses that the DCP processes the sampled DSL signal data to compute peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 16.

As per claim 17 Tambe and Hurst disclose claim 14. Shenoi inherently discloses the DCP processes the sampled DSL signal data to compute root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral

density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 17.

As per claim 18 Tambe and Hurst disclose claim 14. Shenoi discloses the DCP processes the sampled DSL signal data to compute power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 18.

As per claim 19 Tambe and Hurst disclose claim 14. Shenoi inherently discloses a bypass relay for coupling the DCP to the bypass switches (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the

loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 19.

As per claim 20 Shenoi, Tambe and Hurst disclose claim 19. Shenoi inherently discloses the DCP upon receiving control signals from the central office controller, uncouples the amplification circuitry from the local loop by activating a deactivated bypass relay (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 20.

As per claim 21 Shenoi, Tambe and Hurst disclose claim 19. Shenoi inherently discloses the DCP upon receiving control signals from the central office controller, uncouples the amplification circuitry from the local loop by activating a deactivated bypass relay (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by

Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 21.

As per claim 22 Shenoi, Tambe and Hurst disclose claim 19. Shenoi discloses that processing the control signals to select the DSL amplification circuitry for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 22.

As per claim 23 Shenoi, Tambe and Hurst disclose claim 19. Shenoi discloses that processing the sampled DSL signals to select the DSL amplification circuitry for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract).

Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 23.

As per claim 26 Tambe and Hurst disclose claim 24. Tambe and Hurst don't specifically disclose that each loop extender, upon receiving a broadcast control signal, samples DSL signals. Shenoi discloses that each loop extender, upon receiving a broadcast control signal, samples DSL signals (figure 5 column 9 line 46 to column 10 line 22). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 26.

As per claim 27 Tambe, Hurst and Shenoi disclose claim 26. Shenoi inherently discloses that each loop extender processes the sampled DSL signals to compute average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions

(Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 26.

As per claim 28 Tambe, Hurst and Shenoi disclose claim 26. Shenoi inherently discloses that each loop extender processes the sampled DSL signals to compute peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 28.

As per claim 29 Tambe, Hurst and Shenoi disclose claim 26. Shenoi inherently discloses that each loop extender processes the sampled DSL signals to compute root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both

transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 29.

As per claim 30 Tambe, Hurst and Shenoi disclose claim 26. Shenoi discloses that each loop extender processes the sampled DSL signals to compute power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 30.

As per claim 31 Tambe and Hurst disclose claim 24. Tambe and Hurst don't specifically disclose the step of amplifying upstream and downstream DSL signals via DSL amplification circuitry. Shenoi discloses the step of amplifying upstream and downstream DSL signals via DSL amplification circuitry (figure 4 column 7 line 64 to column 8 line 14). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi

abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 31.

As per claim 32 Tambe, Hurst and Shenoi disclose claim 31. Shenoi inherently discloses that each loop extender, upon receiving a broadcast control signal, uncouples the DSL amplification circuitry from the local loop (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 32.

As per claim 33 Tambe, Hurst and Shenoi disclose claim 31. Shenoi inherently discloses that each loop extender, upon receiving a broadcast control signal, couples the DSL amplification circuitry to the local loop (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 33.

As per claim 34 Tambe and Hurst disclose claim 24. Tambe and Hurst don't specifically disclose that where each loop extender, upon receiving a broadcast control signal, selects switch states of the DSL amplification circuitry according to the broadcast control signal for improving performance of the DSL amplification circuitry. Shenoi inherently discloses that where each loop extender, upon receiving a broadcast control signal, selects switch states of the DSL amplification circuitry according to the broadcast control signal for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35). Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 34.

As per claim 35 Tambe and Hurst disclose claim 24. Tambe and Hurst don't specifically disclose that each loop extender, upon receiving a broadcast control signal, samples the DSL signals and selects switch states of the DSL amplification circuitry according to the sampled DSL signals for improving performance of the DSL amplification circuitry. Shenoi inherently discloses that each loop extender, upon receiving a broadcast control signal, samples the DSL signals and selects switch states of the DSL amplification circuitry according to the sampled DSL signals for improving performance of the DSL amplification circuitry (column 8 line 57 to column 9 line 35).

Shenoi, Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supplement the loop extender disclosed by Tambe with the loop extender disclosed by Shenoi. The suggestion/motivation for doing so would have been to adapt the amplification in both transmission directions (Shenoi abstract). Therefore, it would have been obvious to combine Tambe with Hurst to obtain the invention as specified in claim 35.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
10-27-2005

KEVIN BURD
PRIMARY EXAMINER